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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,069	03/30/2001	Katsuyuki Suzuki	205279US-3X	5315

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EXAMINER

PIERCE, WILLIAM M

ART UNIT	PAPER NUMBER
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3711

DATE MAILED: 09/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/821,069

Applicant(s)

SUZUKI ET AL.

Examiner

William M Pierce

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

WILLIAM M. PIERCE
PRIMARY EXAMINER

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DETAILED ACTION

Specification

No core 24 in drawings as set forth on pg. 7, of specification. The drawings and specification should be review to check for further errors made.

The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

Claim Rejections - 35 USC § 112

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, "the rotational axis in the exterior surface" and "between interior surfaces" lack proper antecedent. Typo on ln. 6 and "valve" on ln. 7. Claims 2-18 should be corrected where appropriate as set forth above with respect to claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tool and Manufacturing Engineers Handbook in view of Mori and Nomura.

As to claims 1 and 17, the point angle is old and is known to vary depending upon the hardness of the material used. Reducing the drill point angle to 60 deg. for softer material up to 140 deg. for harder material is old and well known (See pg. 9-41). To have selected a range from 125-135 deg. for the point angle would have been

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obvious to drill harder materials. The radial rake angle has an old and well known affect on torque and horsepower. As taught by Mori radial rake angle in the range of -5 deg. is common (col. 4, 47 and Table 8). Pg. 9-39 fig. 9-21 shows a "conventional twist drill" where the groove width to land is 1 to 1, which meets the limitations of the claims. Such a range is a design between the ability to carry away the chips (width of the groove web) to strength of the drill (amount of material forming the land area). While no dimensions are shown by Handbook, the figure shows the claimed proportion. In the alternative, to have selected the claimed groove width ratio would have been obvious in order to give adequate strength and adequate removal of chips. As to claims 2 and 4, the "core diameter is equivalent to the web thickness (pg. 9-15). Known is that web thickness is a variable that controls the strength of the drill and the thrust force needed. The have a relatively large web thickness between about $\frac{1}{2}$ and $\frac{1}{3}$ the cutting edge diameter would have been obvious to make a stronger drill. See "heavy-duty drills" discussed on pg. 9-43. As to claims 3, 5 and 6, helix angles between 15 and 20 deg. are common depending upon the material and penetration rate desired. See pg. 9-45. As to claims 7-16, Nomura teaches that cemented carbide at $.7\mu\text{m}$ would have been obvious for toughness.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bieneck, Imanaga'863 and Yoshimura show drills.

Any inquiry concerning this communication and its merits should be directed to William Pierce at E-mail address bill.pierce@USPTO.gov or at telephone number (703) 308-3551.

Any inquiry not concerning the merits of the case such as **missing papers, copies, status or information** should be directed to Tech Center 3700 Customer Service Center at (703) 306-5648 where the fax number is (703) 308-7957 and the email is Customerservice3700@uspto.gov.

For **official fax** communications to be officially entered in the application the fax number is (703) 305-3579.

For **informal fax** communications the fax number is (703) 308-7769.

Any inquiry of a general nature or relating to the **status** of this application or proceeding can also be directed to the receptionist whose telephone number is (703) 308-1148.

Any inquiry concerning the **drawings** should be directed to the Drafting Division whose telephone number is (703) 305-8335.



WILLIAM M. PIERCE
PRIMARY EXAMINER